

AMENDMENTS TO THE CLAIMS

Please amend claims 1, 2, and 18 as indicated among the following complete set of pending claims:

Claim 1. (Currently amended) A method for preprocessing an audio signal to be processed by a codec having a variable coding rate determined based on a characteristic of the audio signal, comprising the step of: performing a pitch harmonic enhancement ("PHE") preprocessing of the audio signal before the audio signal is processed by the codec, to thereby enhance the pitch components of the audio signal.

Claim 2. (Currently Amended) A method as defined ~~defined~~ in claim 1, wherein said step of performing PHE preprocessing is to modify the audio signal such that a long-term prediction gain of the audio signal is increased.

Claim 3. (Original) A method as defined in claim 1, wherein said step of performing PHE preprocessing comprises the step of: applying a smoothing filter in a frequency domain.

Claim 4. (Original) A method as defined in claim 3, wherein said step of applying a smoothing filter comprises the step of: applying a Multi-Tone Notch Filter ("MTNF") for decreasing residual energy.

Claim 5. (Original) A method as defined in claim 1, wherein said step of performing PHE preprocessing comprises the step of performing Residual Peak Enhancement ("RPE").

Claim 6. (Original) A method as defined in claim 1 wherein said step of performing PHE preprocessing comprises the step of: applying a smoothing filter in a frequency domain; and performing RPE, wherein said step of applying a smoothing filter is selectively performed depending on the property of the audio signal.

Claim 7. (Original) A method as defined in claim 6, wherein said step of applying a smoothing filter comprises the step of: applying a Multi-Tone Notch Filter ("MTNF") for decreasing residual energy.

Claim 8. (Original) A method as defined in claim 7, wherein said step of applying MTNF comprises the steps of: evaluating a Global Masking Threshold ("GMT") curve of the audio signal in accordance with a perceptual sound model; and selectively suppressing frequency components under said GMT curve.

Claim 9. (Original) A method as defined in claim 8, wherein said step of evaluating a GMT curve comprises the steps of: normalizing absolute Sound Pressure Level ("SPL") by analyzing frequency components of the audio signal; determining tone maskers and noise maskers; reconstructing maskers by selecting a set of maskers among said determined maskers; calculating individual masking thresholds for the selected set of maskers; and calculating GMT from the calculated individual maskers.

Claim 10. (Original) A method as defined in claim 8, wherein said frequency suppressing step comprises the steps of: making the portion below the GMT curve 0.

Claim 11. (Original) A method as defined in claim 8, wherein said frequency suppressing step comprises the steps of: multiplying by a cosine smoothing function to the portion below the GMT curve.

Claim 12. (Original) A method as defined in claim 5, wherein said step of performing RPE comprises the steps of: multiplying selected frequency components by a Peak Harmonic Enhancement ("PHE") response that is a function of a pitch for each frame, thereby enhancing the components at the multiples of pitch frequency relative to other components.

Claim 13. (Original) A method as defined in claim 6, wherein said step of performing RPE comprises the steps of: multiplying selected frequency components by a Peak Harmonic Enhancement ("PHE") response that is a function of a pitch for each frame, thereby enhancing the components at the multiples of pitch frequency relative to other components.

Claim 14. (Original) A method as defined in claim 5, wherein said step of performing RPE comprises the steps of: increasing selected frequency components to corresponding GMT values, thereby enhancing the components at the multiples of pitch frequency relative to other components.

Claim 15. (Original) A method as defined in claim 6, wherein said step of performing RPE comprises the steps of: increasing selected frequency components to corresponding GMT values, thereby enhancing the components at the multiples of pitch frequency relative to other components.

Claim 16. (Original) A method as defined in claim 1, further comprising the step of performing dynamic range compression ("DRC") preprocessing by an AGC (Automatic Gain Control) preprocessing.

Claim 17. (Original) A method as defined in claim 16, wherein said AGC preprocessing comprises the steps of: calculating a forward-direction signal level; calculating a backward-direction signal level; and generating a processed signal by calculating a final signal level based on said calculated forward and backward signal levels.

Claim 18. (Currently amended) A system for preprocessing an audio signal to be processed by a codec having a variable coding rate determined based on a characteristic of the audio signal, comprising: means for performing a pitch harmonic enhancement ("PHE") preprocessing of the audio signal before the audio signal is processed by the codec to thereby enhance the pitch components of the audio signal, wherein said means for performing PHE preprocessing comprises; means for applying a smoothing filter in a frequency domain selectively depending on the property of the audio signal; and means for performing RPE.

Claim 19. (Original) A system as defined in claim 18, wherein said means for applying a smoothing filter comprises means for applying a Multi-Tone Notch Filter ("MTNF") for decreasing residual energy.

Claim 20. (Original) A system as defined in claim 19, wherein said means for applying MTNF comprises: means for evaluating a Global Masking Threshold ("GMT") curve of the audio signal in accordance with a perceptual sound model; and means for selectively suppressing frequency components under said GMT curve.

Claim 21. (Original) A system as defined in claim 20, wherein said means for evaluating a GMT curve comprises: means for normalizing absolute Sound Pressure Level ("SPL") by analyzing frequency components of the audio signal; means for determining tone maskers and noise maskers; means for reconstructing maskers by selecting a set of maskers among said determined maskers; means for calculating individual masking thresholds for the selected set of maskers; and means for calculating GMT from the calculated individual maskers.

Claim 22. (Original) A system as defined in claim 18, wherein said means for performing RPE comprises: means for multiplying selected frequency components by a Peak Harmonic Enhancement ("PHE") response that is a function of a pitch for each frame, thereby enhancing the components at the multiples of pitch frequency relative to other components.

Claim 23. (Original) A system as defined in claim 18, wherein said means for performing RPE comprises: means for increasing selected frequency components to corresponding GMT values, thereby enhancing the components at the multiples of pitch frequency relative to other components.